

## EA307 Engineering Analysis

### Syllabus & Homework Assignments

Text: Numerical Methods for Engineers by Chapra & Canale

Student Edition of MATLAB, The Mathworks

Week	Topics	Reading	Homework
WK 1	<b>Week of 08 January 2001</b>		
	Programming: Intro to design, Flowcharting	CH 2	2.6, 2.7
	Numerical Constants	CH 2	
	Psuedo-code development	CH 2	2.3, 2.8
WK 2	<b>Week of 15 January 2001</b>		
	MLK Day		
	Programming documentation	Handout	Computer Program 1
	Quality Control: debugging	MATLAB	
WK 3	<b>Week of 22 January 2001</b>		
	Flow Control: Decision	MATLAB	Computer Program 2
	Flow Control: Repetition	MATLAB	
	Flow Control: Nested loops	MATLAB	
WK 4	<b>Week of 29 January 2001</b>		
	Modular design: subroutines	MATLAB	Computer Program 3
	Modular design: function calls	MATLAB	
	Modular design: local/global variables	MATLAB	
WK 5	<b>Week of 5 February 2001</b>		
	Data structures: arrays	MATLAB	Computer Program 4
	Data structures: vectors/matrices	MATLAB	
	Array operations	MATLAB	
WK 6	<b>Week of 12 February 2001</b>		
	Input-Output, 2D graphs	MATLAB	Computer Program 5
	Graphing, 3D	MATLAB	
	Exam #1, Project # 1 Due		
WK 7	<b>Week of 19 February 2001</b>		
	President's Day		
	Intro to Linear Algebra	PT3	9.1, 9.2, 9.3
	Naive Gauss Elimination	CH 9	9.8, 9.10
WK 8	<b>Week of 26 February 2001</b>		

		Gauss Elimination w/ Pivoting	CH 9	9.9, 9.11
		LU Decomposition	CH 10	10.2, 10.3
		Matrix Norms	CH 10	10.10
WK 9		<b>Week of 5 March 2001</b>		
		Programming Lab		
		Single Variable Statistics	PT 5	17.1, 17.3
		Linear Regression	CH 17	17.4, 17.5
WK 10		<b>Week of 12 March 2001</b>		
		Spring Break		
		Spring Break		
		Spring Break		
WK 11		<b>Week of 19 March 2001</b>		
		Polynomial Regression	CH 17	17.6, 17.13
		General Least Squares	CH 17	17.14, 17.15
		Curve Fitting Lab		
WK 12		<b>Week of 26 March 2001</b>		
		Exam Review		
		Exam #2, Project # 2 Due		
		Roots of Equations: Bracketing Methods	CH 5	5.1, 5.3, 5.6, 5.7
WK 13		<b>Week of 2 April 2001</b>		
		Roots of Equations: Open Methods	CH 6	6.2, 6.3
		Multivariable Newton-Raphson	CH 6	6.11, 6.12
		Roots of Equations: Lab		
WK 14		<b>Week of 9 April 2001</b>		
		Ordinary Differential Equations	CH 25	25.1, 25.2
		ODEs: Heun/Mid-Point Method	CH 25	25.3, 25.4
		ODEs: Runge-Kutta Method	CH 25	25.8
WK 15		<b>Week of 16 April 2001</b>		
		ODEs: Runge-Kutta Method	CH 25	25.11
		Boundary Value Problems	CH 27	27.1, 27.2
		ODEs: Lab		
WK 16		<b>Week of 23 April 2001</b>		
		Exam #3, Project # 3 Due		
		TBA		
		Final Exam Review		